



Digital Media

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Is the Web Worth It? *page 3*

Half the world will see your advertisement, but will they click on it? That is the question facing those who wish to advertise on the Web. Internet advertising seems like a cheap way to reach a broad audience, but as the old cliché says, "you get what you pay for." More advertisers are beginning to feel that they pay too much to advertise on sites like HotWired and Pathfinder. With some Web-based services charging \$100,000 for the equivalent of a billboard with no independently quantifiable results, advertisers are beginning to realize that instead of paying the premium, they can create their own cool Web sites. The inflated prices of the existing Web services are, in a sense, strip-mining fertile dollars from advertisers willing to take a chance on the Net today.

Premedia Publishing *page 9*

Electric Classifieds Inc. may look like your typical Web startup. Headed by a young president and hitting the Web with its ambitious dating service, match.com, earlier this year, the company is more than meets the eye. ECI is holding onto a bit of software that can make the difference between yet another Web service and one that really works — middleware that can help match a surfer's browser with the right combination of data, services and then some. Software solutions like this will make it possible for Netrepreneurs to finally take advantage of the new media promise of authoring information once and publishing it over and over again.

Write Once, Publish Many Times

Electric Classifieds Inc.'s flexible publishing technology

Gary Kremen knows Internet publishing is on an evolutionary path familiar to veterans of corporate computing. Despite all the talk about standards, data formats are proving to be infinitely malleable. Each new combination of computer hardware and software changes the market for information, editorial products and entertainment. Old IS hands know the problem well, but for the rest of us it's the well-spring of a fundamental business conundrum: How will an online product make money in a market that's constantly fragmented by consumers who adopt new technology every six months to a year?

Technology that promised to make publishing an "author once, sell many times" proposition is actually producing a market in which publishers must author once for each and every client and server imaginable. It makes for messy product planning at content companies coveting Internet revenues. Electric Classifieds Inc. (ECI), Kremen's San Francisco-based startup, is about to shake up the online world with a technology that slashes through this Gordian knot.

Consider starting an ezine project in the summer of 1995. There's no assurance that the format you select this year will be useful, let alone popular, when the product makes its debut in 1996. "If anything, browsers are going further apart rather than becoming more standard," said Kremen, the thirtysomething CEO and president of ECI. No one in the online publishing business wants to wait 10 years to make a profit. Yet as the variety of Net servers, electronic mail systems and browsers grows, delivering information across

the chasm between the data formats of a publisher's server and a consumer's computer becomes ever more complex.

Netscape's Web browser swept into first place on the Internet in just six months. That kind of volatility virtually ensures that something else will displace Netscape within a year or two. (If the Justice Department doesn't derail the plans for the Microsoft Network, it's likely Bill Gates will be at the helm of the next Net juggernaut.) Yet a company has to reach Netscape, Spry, and Spy-glass Web clients, plus the Big Four (America Online, CompuServe, Prodigy and MSN — or maybe that's the Big One and the Little Three) commercial online service customers to ensure sufficient sell-through for its information products.

ECI has applied a time-tested corporate solution to the problem of data complexity: a type of software called middleware. For years middleware has plugged the gap between mainframe databases and client software running on Macs and Windows machines. Each time a new format was introduced on the desktop, a new piece of middleware could be plugged into a network server that mended the connections broken by the recently arrived format, without having to retool the server, the data itself, or the existing client software. The recent uptick in productivity attributed to Windows is, in large part, the product of middleware making ancient mainframe data more useful to Windows machines.

Eliminating platform politics

Opting into Net publishing has required companies to adopt an almost religious

approach to server platforms. If you want to reach the two or three million Netscape browser owners out there, the Netscape server is *de rigueur*, as it is the only one that can serve up content that meets these consumers' expectations (for example, background patterns behind text and graphics). Building a site on Prodigy or CompuServe has locked publishers into pricing and security features that don't always translate to the larger Net. A change of venue meant revisiting the format of existing content. Kremen's approach eliminates these bottlenecks.

ECI's middleware doesn't require that you buy into a specific type of Web or online server. It adapts the contents of an Oracle database server to the special requirements of client software. The middleware looks at incoming Web or email requests and assembles files stored in the Oracle database to create a response. It excludes graphic elements that can't be displayed by some browsers and adds special elements, like sound, to files that will be delivered to more robust clients.

Think of it like religion. Let's say you're Lutheran and new in town. You go out and try the local Lutheran churches, but none of them provides the orthodox theology you were used to back in Wisconsin. What you've found are three parishes that are more contemporary versions of the services you're used to. It doesn't feel right, because some elements of the service are too, well, enthusiastic. Then you try the local Baptist church, and that's too evangelical, too. The Presbyterians turn out to be nothing but a bunch of damned radicals, all touchy-feely. One Sunday you

stumble on the Unitarian church, and it dishes up just the right balance of orthodoxy and oddness. You still think of yourself as a displaced Lutheran, but you operate comfortably as a Unitarian. Middleware is like this Unitarian church: it fits the contents of the database to the expectations of client software. Result: publishers can author their content for the highest common denominator and let the middleware adjust individual copies of the document to fit the limitations of the client software.

ECI's publishing tools will let publishers serve the full range of Internet and commercial online customers, including those 25 million email-only users. An email user requesting information from the ECI software will receive a text message or, if the mailer supports enclosures, a more graphically oriented file attached to an email message. Netscape browsers querying the same online publication will see a formatted Web page with all the extra embellishments Netscape provides.

As interactive technology progresses, consumers will be able to view better graphics, sound and even video. Customers and partners will be able to download an updated version of the browser database approximately every two weeks. Loading this file into the ECI software instantly enables delivery of content to new breeds of browser.

Once a customer registers with the ECI software, it can provide further customization of content based on the answers to a few questions about the type of Net connection the customer is using. ECI's software can add or subtract bandwidth-dependent elements. If a person is logging in over a slow modem, most graphics will be cut out of the pages they see. Someone accessing an ECI-based site from a corporate site with bandwidth to spare will receive high-resolution graphics and more-elaborate layouts.

Mismatch?

ECI has received a fair amount of press for its first publishing effort, an online

dating service called match.com. The coverage, however, has focused on the company's potential role in advertising and not how its technology changes the economics of online distribution. Everyone is looking at Electric Classifieds' name and missing its technology's insurgent nature.

Netscape and other companies that plan on making their fortunes selling servers have made their names on the free software they gave away to create the market. But their razors can be fitted with ECI's blades. Because any company with an Oracle database can install ECI's middleware and become a Net publisher serving content to 90 percent of the online market, the follow-on revenues Netscape is banking on may not materialize. Kremen said versions of the middleware will be made available for other types of databases next year. Essentially, Kremen has taken the Web server out of the World Wide Web.

Netscape, meanwhile, has hired a huge staff and forged alliances with Sun Microsystems, Terisa Systems Inc. (a network security provider) and Adobe, among others, to keep its browser at the forefront of the graphical and transactions race. ECI can simply incorporate the features Netscape builds by adding a relatively few lines of database code to its middleware. This isn't theft of intellectual property, because the typical ECI-based publisher will likely be a licensee of the format it wishes to deliver. For example, if a publisher wants to use Adobe's Acrobat format, all it need do is buy the Acrobat software and install it; the ECI software merely parcels out the finished Acrobat files stored in the database. "The only trick is if we have to create the [Acrobat files] ourselves from non-[Acrobat] stuff," said J. Sterling Hutto, general manager of technology at ECI. "I bet it would require a license."

Netscape's predicament isn't so dire, because the company can develop extensions to the language of the World Wide Web that differentiate it from the

standards ECI is relying on. However, as Netscape's format becomes more proprietary it threatens to undermine its audience by making non-Netscape browsers incompatible with its servers. What made the Web so attractive was its open standards that anyone could build on. That led to the proliferation of browsers we know as the "Internet explosion." An increase in proprietary formats could open the door to another standard authoring tool, like Microsoft's Blackbird, a superset of the same language the Web is based on.

Things won't be that easy for ECI, of course. With fewer than two dozen employees, it will have to keep abreast of the entire Net market while managing its own growth.

However, a few key alliances can go a long way for Kremen. First, he's looking at establishing relationships with Sun to get access to its Java programming language (see *Digital Media Vol. 5, No. 1, "Net Agents," p. 15*).

Java provides the ability to bundle up "applets" and ship them over the Internet to augment client software. For example, a Java-based browser can download software from a Web server that lets it play an audio file or a networked game. A combination of Java and ECI's middleware, with the power of a database beneath it to mix and match Java applets, will let publishers add new media features to an online product by simply dropping new applets in their Oracle database.

Now put yourself in the place of an Oracle database controlled by the ECI middleware. Your head is filled with all sorts of items of information. A friend walks up and asks you to tell him about Helmut Kohl. You've got some textual data about Kohl, as well as a lot of CNN footage of Kohl and other dignitaries. Your friend has a rare disorder that prevents him from seeing moving images, so you give him the textual information and stills from the video footage. The next time you see him, a new cure for his disability has been introduced. You hand him the pill that will cure him (a Java applet for viewing video) and play the

CNN footage. Given these kinds of capabilities, a publisher will be able to begin assembling a very rich database of text, sound, graphics, video and whatnot today, regardless of the capabilities of current browsers, and, as new Web features are introduced, add more content to their products without reauthoring.

ECI need not keep up with the capabilities of Java browsers if it incorporates into its middleware the ability to handle applets. As browsers and applets become more sophisticated and publishers add them to their databases, ECI's middleware will ride up the performance curve. It's the same strategy Netscape is pursuing in its own agreement with Sun to incorporate Java technology into its servers and browsers.

The most important relationship moving forward will be with Microsoft. If ECI can successfully negotiate for a license to Microsoft's Blackbird authoring tools, it will be in a position to offer content built for the Microsoft Network and its new Internet Explorer on any network (see *Digital Media*, Vol. 4, No. 10, "All Roads Lead to Microsoft?").

Authoring tools will be critical to its success, for content providers will flock to a system that lets them create publications and media experiences that can be converted into Web, MSN and email-compatible output. Kremen said the tools ECI will roll out later this year are designed for use by graphic designers and artists, not technicians. Based on ECI's Resource Design Language, the tools will process each object entered on a layout, sorting each object into the Oracle database to create a comprehensive blueprint for how it can be combined with other objects at publication time.

Proofing online publications is an especially vexing process, as old content is constantly affected by the addition of new information. In the World Wide Web environment, virtually anyone who has access to the HTML documents can make changes. ECI's technology allows assignment of privileges to each person working

on a project. A graphic artist can't make a change that inadvertently alters the price of a publication. Likewise, in co-branding or cross-selling situations, employees of partner companies cannot make changes to data that is owned by the other party.

ECI plans to deliver its own advertising-based service and to partner with content providers who want to use its technology. In these scenarios the company counts on transaction fees to generate revenues. Its strategy for licensing technology to media companies is not thoroughly fleshed out. For now, ECI is pursuing joint ventures.

Data-powered publishing

Sophisticated matches have gained ECI its early fame. Its match.com service is the first personal-ad service to let people search electronically for a date or mate by interests, body type, location and anonymous Net handle. It lets people advertise their availability at no charge, levying a fee only for the actual contact with an electronic suitor. The database behind the middleware is the source of this power, which can search for and connect would-be lovers or, just as easily, buyer and seller. It will be extended to a wide range of advertising services from ECI and joint ventures with publishers.

"The content today is a bunch of people who you might find a match with, but it can become any kind of product or service you can imagine," said Jim Bidzos, president and CEO of Redwood City, Calif.-based RSA Data Security, an investor in ECI. "I saw what Gary was doing as a natural application of networks."

Once ECI makes a customer, it plans to keep them for life. From the first moment of the relationship, its middleware begins to file away records about how they have used the service, what interests they express, how often they log on and what they spend. As new services are added, the database of customer interests can be analyzed to create promotions on the fly. If, for instance, ECI launches a travel service, it could in-

clude a special offer on a weekend ski condominium rental for match.com customers with each dating referral.

Moreover, the extensive records can be used to customize what each person sees. Like a chef who knows his customers well enough to leave the sauce off a roast duck for one, and add extra sauce to another, ECI's services can dish up special designs for each person.

Match.com, for example, shows different home pages to men and women logging in to check their mail. A newspaper using the ECI middleware could present a completely customized front page to every customer, swapping even the banner and name of its publication: One might receive Bob's *Seattle Post-Intelligencer* or a version of the paper designed for a suburb of the city, perhaps even the *Microsoft Post-Intelligencer* (which is not so far from the truth already).

Database features can also facilitate instant co-branding and cross-selling among ECI-based services. Kremen used the example of the New Century Network of newspapers that banded together to invade cyberspace last spring (see *Digital Media*, Vol. 4, No. 12, "AP for Online"). Imagine you're shopping for a house in anticipation of a move from San Francisco to Washington, D.C. When logging onto the *San Francisco Examiner*'s online service, you'd be asked for the parameters of a search of home listings. Finding that you're interested in real estate across the country, the Examiner service would hand you off to the Washington Post Co.'s Digital Ink service, which would give you a list of homes. But all you'd see as a consumer would be a service called "Allied Van Lines' Cross-Country Real Estate Service," which, when you ask for more information about a particular house, delivers it free, along with a special offer on moving services. The two papers would receive a portion of the advertising fee paid by Allied Van Lines.

"Publications want to be paid for referring customers back and forth, and you

might not own all the publications involved in a transaction," Kremen said. "We can set up fee-splitting arrangements that require no human intervention at all."

Although he spouts all the au courant New Age slogans, like "one-to-one marketing," Kremen's not expecting the Internet to radically alter the way markets are made and won. Electronic channels and resellers will claim specialized niches, just as they have in the physical economy. ECI's software anticipates skyrocketing complexity. "We don't think the Net will always be a direct sell," Kremen said. "There will be integrators and resellers, which make revenue splits and database marketing all the more important."

As long as the databases beneath ECI's software continue to improve, Kremen's technology should be able to keep up with the demands of the information economy.

The road less traveled

ECI's strength could be its downfall. It may remain above the server/browser fray but, by so doing, place itself at midcourt in the battle of the database giants. Oracle, Sybase or Microsoft could incorporate middleware-like features into their databases and usurp tiny ECI. That said, we believe the company has focused on some unexpected value-added aspects of the market that will make it not a major player 10 years from now but a profitable survivor.

Kremen and Hutto are thinking the right way about the relationship of people and technology. They recognize that the people who populate match.com's personals pages are their greatest asset, beyond even the technology that brings them together. A staff of a half-dozen Net surfers, all fresh out of college and fascinated by online culture, troll the shallows of cyberspace looking for customers, particularly women, for the dating service.

There are almost as many surfers in the company as programmers. The surfers monitor newsgroups, chat areas and Web sites for people they think will make interesting listings at match.com.

Their online signatures point to the match.com URL, and they make plenty of suggestions about where to find information, software and services, all in the hopes of attracting attention to ECI. Kremen forged an early alliance with Women's Wire, the female-oriented Net community based in San Francisco, to attract personals participants. Every member of the ECI team owns a part of the company, even the entry-level surfers.

This human investment will give ECI the power to attract constituencies to new advertising and editorial services. The surfers are building reputations as personalities worth knowing and hanging around. When they start pointing people to a classified service for used cars or flats for rent, consumers will listen.

Solving the copyright problem is another area where ECI may stand out. Every page sent by the ECI software to a client application can be tracked using a combination of a mathematical analysis of the text on a page and the date and time it was transmitted. Taken together, these figures produce a unique number that can be embedded in the document

and logged in the publisher's database. If ECI or the publisher later suspects that a page they produced was illegally copied, this identifier can be used to trace the document back to the registered user who originally downloaded it. This won't dramatically reduce piracy, but it does allow the company to educate the public about copyright by compiling records of abuse and targeting grievous offenders as examples.

Ultimately, ECI is protected by its own vision of the future. The company is setting itself up to be an integrator for media clients who want to take their content into cyberspace. Even if Oracle grabbed ECI's market by adding middleware features to its database server, ECI has placed itself to serve as a consultant on publishing and marketing technology. As investor Jim Bidzos pointed out, the company will do quite well if it can establish a sound business strategy that accounts for changes in the Net environment. As long as ECI stays abreast of change, the force that gave the company its initial opportunity, it is positioned to play an important role in online publishing.

MPEG-2 Primer

Video compression scheme

By Michael Sauter

Two primary formats are to this day the de facto standards for digital video on personal computers: Radius's Cinepak, which was originally SuperMac's before the two companies

merged, and Intel's Indeo. Both formats and their accompanying software were developed at a time when playback speed was the deciding factor for compression viability.